

AR 226-1471

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TO: DR. Y. L. POWER

FROM: PAUL THISTLETON

CORRECTION OF ORGANIC FLUORINE IN BLOOD RESULTS
 FOR RECOVERY

The recent comparison of Torch and C-8/GC results for 27 blood samples made at ESL indicated that C-8/GC results were about 25% above uncorrected Torch results. This led to a review of 1979 results (8 samples in June and 78 samples in August, 1979) which is reported in L. J. Papa's January 23, 1980, letter "Comments on Validity of 1979 Fluorine in Blood Results", (copy attached).

Following Papa's recommendations the results obtained by Bomb and Torch methods have been corrected for recovery as indicated below. Bomb data obtained for August, 1979 samples require an additional correction factor of 1.18 to compensate for deterioration of the reagent (#5 in Papa's letter), combining this with 92% recovery gives a correction factor of 1.28.

<u>Sampling Period</u>	<u>Analytical Method</u>	<u>Correction Factor</u>
June, 1979	Bomb	1.09
August, 1979	Bomb	1.28
December, 1979	Bomb	1.09
August, 1980	Torch	1.20

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Results are given in Table I. Only the 1979 samples that were repeated in 1980 are included.

There is good agreement between Torch results (Columns 5 and 6) and C-8/GC results (Column 7) which were obtained on the same samples. There is no obvious trend of results with time. A better comparison, including statistical analysis, will be possible when the rest of the 78 people sampled in 1979 have been tested. We expect that their blood will be analyzed only by the C-8/GC method. Their uncorrected 1979 results which were reported to them should be increased by 28% to allow comparison with C-8/GC results.

Attachment

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TABLE I
COMPARISON OF BLOOD ANALYSES

IDENTIFICATION NUMBER	1979 SAMPLES BOMB ANALYSIS - JL (1)				AUGUST 1980 SAMPLES TORCH ANALYSIS C-8/GC		
	ppm Organic Fluorine				ppm Organic Fluorine		
	JUNE -1-	JUNE X 1.09 -2-	AUGUST -3-	AUGUST X 1.28 -4-	ESL (2) -5-	JL -6-	ESL -7-
<u>No Direct Exposure</u>							
1 ✓							
2 ✓					0.29		0.022
					-	0.2	0.015
<u>Professionals</u>							
3 ✓							
4 ✓					0.04		0.22
5 ✓					0.53		0.40
6 ✓			0.45	0.58	-		0.19
						0.4	0.52
<u>Monomer Operators</u>							
7 ✓							
8 ✓			0.39	0.50	1.0		0.78
9 ✓			5.3	6.8	6.2	6.0	6.4
			6.7	8.6	7.8	8.1	8.2
<u>Fine Powder Dispersion</u>							
<u>Zone 6</u>							
10 ✓		22.2	24.2	27.1	24.4	25.3	24.0
12 ✓		10.6	11.6	11.1	11.6	12.4	13.0
13 ✓		15.0	16.4	17.7	19.8	17.8	21.0
14 ✓			13.8	26.6		28.0	29.0
15 ✓			20.8	2.3	4.0	4.6	4.6
			1.8				
<u>Zone 4</u>							
16 ✓			1.8	2.3	5.5	5.5	5.6
<u>Granular</u>							
<u>Zone 6</u>							
17 ✓			0.47	0.60	1.7	2.0	1.9

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IDENTIFICATION NUMBER	1979 SAMPLES BOMB ANALYSIS - JL (1)				AUGUST 1980 SAMPLES TORCH ANALYSIS C-8/GC		
	ppm Organic Fluorine				ppm Organic Fluorine		
	JUNE JUNE	X 1.09	AUGUST	AUGUST X 1.28	ESL (2)	JL	ESL
	-1-	-2-	-3-	-4-	-5-	-6-	-7-
FEP Polymerization							
18✓	1.36	1.5	0.99	1.3	1.3		1.5
19✓			3.7	4.7	4.1		4.0
20✓	3.61	3.9	1.99	2.5	3.5	3.5	3.2
21✓			4.96	6.3	6.7		6.6
22✓			4.14	5.3	4.4		5.5
23✓			4.52	5.8	4.9		4.9
24✓			2.71	3.5	2.5	3.1	2.9
25✓			4.64	5.9	7.7	7.7	7.8
26✓			0.91	1.2	1.2	1.0	1.2
FEP Service							
27✓					1.1		0.72
Research Semiworks							
28✓					0.5	0.4	0.26

- (1) JL = Jackson Laboratory
(2) ESL = Experimental Station Laboratory

Notes on Columns

- 1- Part of first WW sampling (total of 8 samples). Data in this column is enclosed in a block to indicate that it should not be compared with corrected data.
- 2- Column -1- X 1.09 correction factor.
- 3- Part of second WW sampling (total of 78 samples, including resample of original 8 samples). Data in this column is enclosed in a block to indicate that it should not be compared with corrected data.
- 4- Column -3- X 1.28 correction factor.
- 5- August 1980 sampling for comparison of analytical methods (total of 28 samples)* analyzed by Torch method at ESL. Results corrected for 83% recovery demonstrated for Torch method by E. Kissa, Jackson Laboratory.
- 6- August 1980 sampling for comparison of analytical methods analyzed by Torch method at Jackson Laboratory. Results corrected for 83% recovery.
- 7- August 1980 sampling for comparison of analytical methods analyzed by C-8/GC method at ESL. 100% recovery assumed.

Correction factors and recovery are taken from L. J. Papa's letter "Comments on Validity of 1979 Fluorine in Blood Results", 1/23/81.

* Sample No. 11 is not reported because unusually large variation in results was found. Analysis will be made on a new sample.

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